

CLAIMS:

1. A composition comprising:
 - (a) an elastomer comprising C₄ to C₇ isoolefin derived units;
 - (b) a processing oil;
 - (c) a resin selected from:
 - (i) a petroleum hydrocarbon resin having a Tg below 50°C,
 - (ii) oligomers having units selected from the group of cyclopentadiene, substituted cyclopentadiene, C₅ monomers, and/or C₉ monomers, and
 - (iii) combinations of (i) and (ii)
- wherein the resin comprises less than 3 phr of α-methylstyrene homopolymer having a softening point of 93°C to 150°C and a Tg from 15°C to 75°C.
2. The composition according to claim 1 wherein the resin is a petroleum hydrocarbon resin having an aromatics content less than 50%.
3. The composition according to claim 1 or 2 wherein the resin has a Tg less than 48°C.
4. The composition according to claim 1 wherein the processing oil is selected from paraffinic oils, naphthenic oils, aromatic and polybutene processing oils.
5. The composition according to claim 4 comprising 2-20 phr processing oil.
6. The composition according to claim 4 comprising 5-15 phr processing oil.
7. The composition according to claim 1 wherein the resin is selected from the group consisting of: aliphatic hydrocarbon resins, hydrogenated aliphatic hydrocarbon resins, aromatic hydrocarbon resins, hydrogenated aromatic resins, aliphatic/aromatic hydrocarbon resins, hydrogenated aliphatic/aromatic hydrocarbon resins, cycloaliphatic hydrocarbon resins, hydrogenated cycloaliphatic resins, cycloaliphatic/aromatic hydrocarbon resins, hydrogenated cycloaliphatic/aromatic

hydrocarbon resins, polyterpene resins, terpene-phenol resins, rosin esters, and mixtures of two or more thereof.

8. The composition according to claim 1 comprising 2-10 phr resin.
9. The composition according to claim 1 comprising 4-8 phr resin.
10. The composition according to claim 1 wherein the resin is a hydrocarbon resin having a Tg between -30°C and 35°C.
11. The composition according to claim 1 wherein the oligomers have a molecular weight (Mn) between 130-500.
12. The composition according to claim 1 wherein the resin is an oligomer having units selected from cyclopentadiene, substituted cyclopentadiene, and C₈-C₁₀ aromatic olefins.
13. The composition according to claim 1 further comprising a filler selected from carbon black, modified carbon black, silicates, exfoliated clay, and mixtures thereof.
14. The composition according to claim 1 further comprising a secondary rubber selected from natural rubbers, polyisoprene rubber, styrene-butadiene rubber (SBR), polybutadiene rubber, isoprene-butadiene rubber (IBR), styrene-isoprene-butadiene rubber (SIBR), ethylene-propylene rubber, ethylene-propylene-diene rubber (EPDM), polysulfide, nitrile rubber, propylene oxide polymers, poly(isobutylene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-cyclopentadiene), halogenated poly(isobutylene-*co*-cyclopentadiene), poly(isobutylene-*co*-isoprene-*co*-*p*-methylstyrene), halogenated poly(isobutylene-*co*-isoprene-*co*-*p*-methylstyrene), poly(isobutylene-*co*-isoprene-*co*-styrene), halogenated poly(isobutylene-*co*-isoprene-*co*-styrene), poly(isobutylene-*co*-isoprene-*co*-*p*-methylstyrene) halogenated poly(isobutylene-*co*-isoprene-*co*-*p*-methylstyrene) and mixtures thereof.

15. The composition according to claim 1 wherein the elastomer comprises units selected from isobutylene, isobutene, 2-methyl-1-butene, 3-methyl-1-butene, 2-methyl-2-butene, 1-butene, 2-butene, methyl vinyl ether, indene, vinyltrimethylsilane, hexene, 4-methyl-1-pentene, isoprene, butadiene, 2,3-dimethyl-1,3-butadiene, myrcene, 6,6-dimethyl-fulvene, hexadiene, cyclopentadiene, piperylene, styrene, chlorostyrene, methoxystyrene, indene and indene derivatives, α -methylstyrene, *o*-methylstyrene, *m*-methylstyrene, and *p*-methylstyrene, and *p*-tert-butylstyrene.
16. The composition according to claim 1 wherein the elastomer is a terpolymer.
17. The composition according to claim 1 wherein the elastomer is halogenated.
18. The composition according to claim 1 further comprising a curing agent selected from sulfur, sulfur-based compounds, metal oxides, metal oxide complexes, fatty acids, peroxides, diamines, and mixtures thereof.
19. The composition according to claims 1 or 18 having a green tack above 0.50 N/mm.
20. A cured composition according to claim 18 having a brittleness temperature below -36°C.
21. A cured composition according to claim 18 having an air permeability less than $4.0 \times 10^{-8} \text{ cm}^3 \cdot \text{cm}/\text{cm}^2 \cdot \text{sec} \cdot \text{atm}$.
22. An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves comprising a composition according to claims 1 or 18.
23. An article selected from tire curing bladders, innerliners, tire innertubes, and air sleeves comprising a resin selected from: (i) a petroleum hydrocarbon resin having a Tg below 50°C, (ii) oligomers having units selected from the group of cyclopentadiene, substituted cyclopentadiene, C₅ monomers, and/or C₉ monomers,

and (iii) combinations of (i) and (ii), wherein the resin comprises less than 3 phr of α -methylstyrene homopolymer having a softening point of 93°C to 150°C and a Tg from 15°C to 75°C.

24. A process for manufacturing an air barrier comprising mixing (a) an elastomer comprising C₄ to C₇ isoolefin derived units; (b) a processing oil; (c) a resin selected from the group consisting of: (i) a hydrocarbon resin having a Tg below 50°C, (ii) oligomers having units selected from the group of cyclopentadiene, substituted cyclopentadiene, C₄-C₆ conjugated diolefins, and/or C₈-C₁₀ aromatic olefins, and (iii) combinations of (i) and (ii), wherein the resin comprises less than 3 phr of α -methylstyrene homopolymer having a softening point of 93°C to 150°C and a Tg from 15°C to 75°C.
25. The process according to claim 24 further comprising curing the mixed composition.